

Public Use at San Francisco Bay National Wildlife Refuge



Annual Narrative 1994

*Education, interpretation, volunteers,
and other wildlife-oriented programs for people*

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1994 ANNUAL NARRATIVE PUBLIC USE SECTIONS

E.2. Youth Programs

Boy Scouts and Girl Scouts -- During 1994, the Refuge had 3 employees involved with Scouting. A total of 360 hours, consisting of 90 hours of duty time and 270 hours of volunteer time, were logged.

The Refuge continued to sponsor a boy scout troop and a cub scout pack. Unfortunately, due to a shortage of staff time and volunteer assistance, scouting activity has been less than previous years.

Nick Dizon, a member of Troop 272, completed a public service project on the Refuge in partial fulfillment of the requirements for his Eagle Scout badge. Nick organized a group of his fellow Scouts and with this help, constructed and installed two very nice sitting benches on our popular Tidelines Trail.

Staff and volunteers continued to meet, upon request, with girl and boy scout troops during after-school and weekend visits to the Refuge. Usually the troops were fulfilling requirements for badges and the staff or volunteers presented programs based on what the troop leader requested.

Science Bowl -- In June, a team of science whiz kids from Rufus King High School in Milwaukee visited the Bay Area for a week of science-oriented tourism, courtesy of the Department of Energy, which sponsors a nation-wide Science Bowl. The Science Bowl is a high school tournament-style academic competition that offers students who excel in science and mathematics a forum to display, as well as to increase, their knowledge. San Francisco Bay National Wildlife Refuge hosted a winning team.

The Public Use Division arranged all of the travel details for the team, and set up a week of visits by them to Stanford University's linear accelerator, to the Lawrence Berkeley Laboratory (where they had lunch with a table full of Nobel laureates, and had their pictures taken with Glen Seaborg, the creator of two elements on the periodic table), to the Lawrence Hall of Science, where they chatted about the dissection of Albert Einstein's brain with one of the scientists who had done that, to Jane Goodall's primate research facility, to a trench across the Evergreen earthquake fault where geologists are studying tectonics, and to the Monterey Bay Aquarium and Marine World/Africa U.S.A. and Alcatraz Island for fun.

By week's end the students were exhausted and awestruck. The visit was great fun for everyone involved, and it was a pleasure spending time with some of our nation's future scientific leaders.

E.4. Volunteer Program

Once again, volunteers were vital to the continued success of many of the Refuge's programs. Volunteers staffed the Visitor Center 95% of the time, patrolled the Refuge trails and fishing pier, and presented 98% of the weekend interpretive programs, including walks, slide shows and tours. Volunteers provided administrative help in the office with mailings, data entry, and general clerical help, and also assisted with many maintenance projects around the Refuge. Resource management projects which utilized our volunteers included plantings of native species and the Annual Butterfly Count at Antioch Dunes NWR.

Total hours contributed by 945 registered volunteers throughout the year was 22,950, which at a minimum \$4.25 per hour wage saved the government \$97,538. This included Refuge volunteers, one-time volunteers from the community and Student Conservation Association (SCA) interns. Refuge volunteers are required to go through a 20-hour orientation and training, and to commit 16 hours a month (which is flexible). Currently, there are 112 Refuge volunteers on staff. One-time volunteers from the community include scout, high school, and church groups.

Volunteers were vital to the success of many Refuge events, including Kids' Day, the Native Plant Sales, Earth Day, Migratory Bird Day, Coast Clean-up and the Avocet Festival Wildlife Arts and Crafts Show.

Some of our youngest volunteers shared their knowledge with their peers during this past summer's Junior Naturalist program. These volunteers, graduates of previous Junior Naturalist programs, as well as other new and established environmental education volunteers, assisted staff in teaching 3rd through 6th graders about the salt marsh and the importance of preserving the environment.

Volunteers assisted in various projects at other National Wildlife Refuges. Working with the Cooperating Association, a volunteer continues to order books and merchandise not only for San Francisco Bay NWR, but also for sales outlets at Klamath, Sacramento, and Malheur NWRs. Two Student Conservation Association interns once again assisted Humboldt NWR at an environmental education conference in Humboldt County. Teachers and their classes learned about conservation and the environment through activities led by these interns. (See Section H.2)

A major project this year was the completion of the shutters, closet, and doors on the Pavilion, used by the Environmental Education Program field trips. Klaus Luck, a non-Refuge volunteer, constructed and installed special sliding shutters in the windows of the Pavilion to allow for better viewing of movies and slide shows during day-time field trips. He also constructed a closet to provide more storage space for environmental education field trip materials. Lastly, he installed doors that can either be locked in the closed position to block out light, or in the open position at all other times.

Volunteer Charlie Moore was of invaluable help to the Biology staff this year. It was Charlie's idea to use plastic lawn ornaments as decoys to attract terns and egrets to nesting sites on newly restored Bair Island. He spent a great deal of time and energy procuring these decoys and painting them with realistic colors and patterns. The

Refuge now has decoys for most of the colonial nesting birds that used to nest at Bair Island.

Another project was the preparation of a Butterfly Garden at the Environmental Education Center designed to attract California butterflies. A group with Community Impact Volunteers, consisting of 28 volunteers from two local companies, Acuson and Home Depot, and a "community service" group from a local jail contributed over 130 hours rebuilding the existing trail; adding gravel, leveling it out, and shoring it up. The trail now encompasses the garden area where non-native vegetation was removed and replaced with native vegetation that attracts butterflies. Greg Wagstaff and Pete Salvi, officers from the San Jose Police Department, helped coordinate the community service work party with the Santa Clara County Department of Corrections. Due to all their combined efforts it was possible to begin planting a new Butterfly Garden in 1995.

Volunteers Elaine Agauda and Nancy Fries organized and ran the Earth Day festivities this year. Hourly programs, children's activities, environmental organizations' displays, and the Native Plant Sale focused on this year's theme of "You're the Solution."

Volunteers also organized and ran the Avocet Festival, an annual wildlife arts and craft show, that this year attracted over 1800 visitors to the Refuge. A part of the Festival was the Environmental Fair, which included conservation organizations from around the area, who provided information tables and exhibits.

Approximately 350 people contributed 1,050 hours during the tenth annual Coast Clean-up. Volunteers from the public and Refuge volunteers helped clean up three main sites: the Refuge headquarters area, the Environmental Education Center, and Coyote Creek Lagoon.

An important temporary addition to the Wildlife Biology staff was Stephani Zador, an intern of San Francisco Bay Bird Observatory. Steph worked on a variety of projects including monitoring the nesting activities of the threatened Western Snowy Plovers in South San Francisco Bay and Salinas River NWR; monitoring a nearby colony of Caspian terns; organizing population counts of endangered Lange's Metalmark butterflies at Antioch Dunes NWR; and assisting with California Clapper Rail and the midwinter waterfowl surveys, as well as the analysis of the predator management program at the Refuge.

A vital part of the Refuge's personnel is the Student Conservation Association (SCA) interns. SCA is a worldwide organization that places people for a 3 to 4-month period at various refuges and parks throughout the world so they can gain experience in careers in conservation. This past year there were 12 SCA interns who contributed 40 hours a week for at least 16 weeks. One intern was asked to stay longer due to her obvious commitment and acquired expertise in the Environmental Education Program, and so stayed about eight months. In exchange for her full-time volunteer service, the Refuge provided her with housing and a small subsistence of \$75.00 per week.

Six of the SCA interns, Christie Hendricks, Kim Steinmann, Maureen Wooton, Miranda Harris, Brenda Chatfield, and Caroline Nielands worked with the wildlife biologists,

assisting with endangered California clapper rail and predator surveys, habitat restoration and snowy plover monitoring and protection activities.

Six other interns, Kerry Pasquerelli, Nancy Golden, Anne Marusza, Laura Schaeffer, Kelly Park, and Keith Pace-Asciak were just as vital to the Environmental Education Program. These SCA interns were essential in assisting with teacher orientations, field trips, classroom presentations, Marsh-In Camp and the Junior Naturalists Program. Interns also worked on the development of the *Trekking the Refuge* program, and the continuing improvement of the *Wetland Round-Up* program, developing new field trip activities and teaching aids.

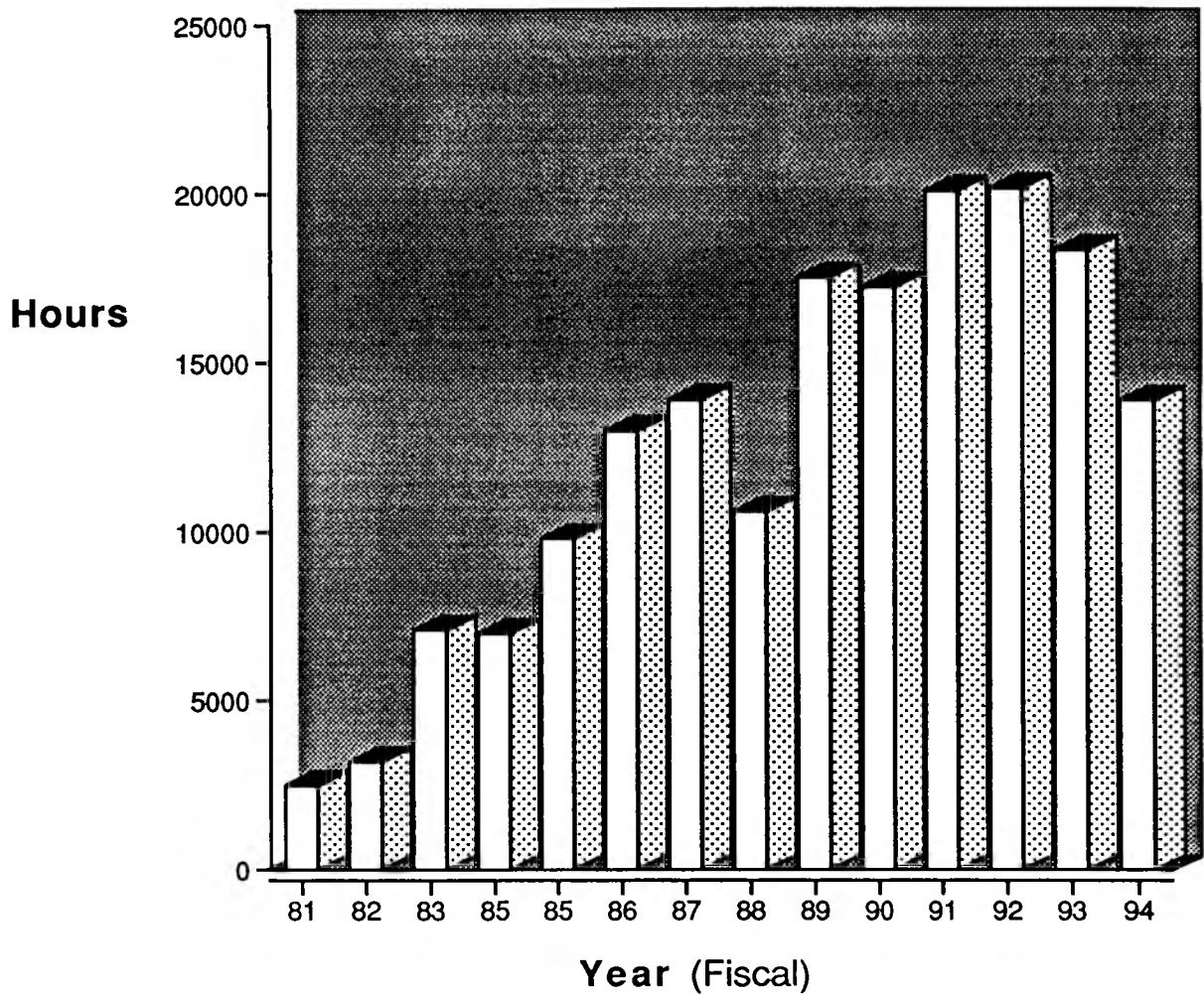
In September, Refuge volunteers were recognized for their efforts at the Annual Volunteer Picnic and Recognition Ceremony (for calendar year 1993). Chicken and steaks were barbecued by staff and everyone else brought a dish to share. All volunteers received a Certificate of Appreciation. In addition, volunteers who had accumulated hours in increments of 500 and 1000 were recognized with special pins and plaques. Special recognition was given to Arthur Wellens who reached the 4500 hour mark! Volunteer of the Year honors went to Stan Brown who contributed 451 hours to the Refuge.

The Refuge Volunteers are highly committed to their community. Many of our Volunteers also volunteer some of their time with other organizations and groups. In December, a group of twenty volunteers and staff members assisted a local public television station with a pledge drive. It was wonderful opportunity for all of us to help give a little back to others in the community.

One advantage of the location of this urban wildlife refuge is that there is a large population base located nearby that serves as a vast reservoir of potential volunteer candidates. We recruit new volunteers through displays at various off-site fairs, word of mouth advertising, and articles in the quarterly *Tideline* newsletter. An application -brochure which describes the volunteer program is also available in the Visitor Center. We conducted three 20-hour training sessions for new volunteers in 1994.

VOLUNTEER HOURS

San Francisco Bay National Wildlife Refuge Complex





Volunteer Alvin Dokter begins his "Botanical Wanderings" walk.



Volunteers prepare to lead "Owl Pellet Dissection" during Kids Day.



Personal awards and a steak dinner for deserving volunteers.

H. PUBLIC USE

H.1. General Public Use

San Francisco Bay National Wildlife Refuge serves a dense, local population of almost 7 million people. It is an ideal place for Bay area urbanites to visit a relatively unspoiled area, enjoy the local wildlife and learn about nature, conservation and wildlife management.

The Public Use Program is composed of two sub-divisions. The Environmental Education Program teaches conservation and wildlife values to children. The Interpretation and Outreach Program explains natural history and salt marsh ecology to families and other audiences on and off the Refuge in a wide variety of media.

The Public Use Program also includes Refuge signage responsibilities, development of exhibits, construction of visitor facilities, writing of brochures and other publications, administration of an active volunteer program, and advancement of general community relations and involvement.

During 1994, 271,962 people visited the Refuge. Thirty thousand, two hundred people stopped in at the Visitor Center, and 6,672 attended interpretive programs, special events, artist receptions and other events. 3,774 visitors dropped by the EEC for weekend interpretive programs. 6,689 students, 539 teachers, and 1,016 other adult leaders attended outdoor classroom activities at the Environmental Education Center in Alviso or the Visitor Center in Fremont. Over 65,186 visitors received our self-guided

in Alviso or the Visitor Center in Fremont. Over 65,186 visitors received our self-guided interpretive messages when they read our wayside exhibits.

The Visitor Center in Fremont was closed on Mondays as the result of a directive from the Washington Office. In addition, it was closed all Federal holidays due to limited funding for staff. The trails and fishing pier remained open from 7:00 a.m. to sunset everyday except New Year's Day, Thanksgiving and Christmas.

In 1994, general public use increased at the Environmental Education Center (EEC) by 17%. The Weekend Interpretive Program continues to be funded by the City of San Jose and the Santa Clara County Non point Source Pollution Control Program. The Center is open from 10 AM to 5 PM on Saturdays and Sundays, and is staffed by a half-time temporary Interpretive Specialist (GS-5). There was a good turn out by the public for trail usage and nature walks. The combined EEC total for all visitor and field trip usage for weekdays in 1994 was 11,080 persons; this figure includes school groups; general public visitors (i.e., drop-in); workshop, meeting, and field trip orientation participants; summer camps; and volunteer trainings. Ten organized groups took advantage of the EEC this year. These groups were a mixture of students from other public programs, landscape cleanup volunteers, scout groups and members of youth programs.

Most of our 1994 visitors participated in recreational activities other than formal programs at one of the two centers. The public fishing area (38,000 users) , trails (61,398 users), sloughs (3,900 duck hunters in boats, and 151 wildlife oriented recreational boaters), and other public areas were used by 103,449 visitors. Many of these people were contacted in the field by Refuge volunteers on patrol.

H.2. Field Trips (Outdoor Classrooms) - Students

The Refuge's Environmental Education Program (EEP) is administered at both the Environmental Education Center in Alviso and the Visitor Center in Fremont by Environmental Education Specialists (EES). Once again, the Refuge offered exciting field trip programs for students; *Trekking the Refuge* field trip program continued its second year as a pilot program at the VC.

The *Wetland Round-Up* and *Trekking the Refuge* field trip program formats allow for small groups of students to rotate from one learning station to the next throughout the day. As a result, students and accompanying adults spend an entire school day learning about the importance of the resource management objectives of the Refuge: preserving and protecting significant wildlife habitat in the South Bay, protecting endangered species, and protecting migratory birds.

Before bringing a group to one of our field trip programs, at least one educator and one other adult must attend a 4-hour field trip orientation workshop. Other adults from a group are encouraged to attend these workshops too. Upon completion of a field trip orientation workshop, an educator has all the necessary tools to plan and conduct an exciting field trip.

A high adult-to-student ratio (2 adults to every 10 students) is important to enhance their learning experience; students are taught more effectively because of individual attention.

A Wetland Round-Up field trip includes an opening slide show for the students conducted by one refuge staff member while another orients the parents to the lay of the land. Then the students divide into small groups and begin activities at different learning stations, rotating from station to station during the course of the day. One adult is a small-group chaperone, moving with his/her group to each learning station. The other adult teaches an activity at a learning station, repeating the activity for each group during the field trip day. The educator acts as a "floater", available to help parent leaders with their learning station activities, answer field trip logistic questions and take care of any student emergency. A closing activity at the field trip's conclusion summarizes topics and ties together any loose ends to make the day's visit more memorable for the children.

Resource Management Objective (RMO) sheets were developed to show the connection between field trip activities, student behavior and the Refuge's resource management objectives and issues. During field trip activities, learning station leaders can use these simple diagrams to illustrate to the students how they can help the Refuge manage its resources. The staff demonstrates the use of these RMO sheets during the field trip orientation workshops.

The Refuge offered a second type of field trip for the first time in 1994. The *Trekking The Refuge* field trips differ from the *Wetland Round-Up* field trips in the amount of staff time needed and number of students allowed on each field trip. For *Trekking The Refuge* field trips, the teacher checks out day packs filled with investigative equipment and sets out on the trail with his/her class. One staff person hands out the activity equipment day packs at the beginning of the field trip and assists the adults in cleaning and counting the equipment at the end of the field trip. A maximum of 35 students (one class size) is allowed on each field trip. This policy limits the impact on the habitats; for part of the day, the whole class is trekking a loop trail. The field trip small group activities have been pre-selected by the EE staff. A lending library with materials such as a slide show, a video, laminated posters, and laminated plant and animal pictures was designed to complement the *Trekking the Refuge* guide. During 1994, a classroom activity section was added to the guide, with ideas for pre-visit and post-visit activities.

The *Wetland Round-Up* field trip requires the help of two staff people in conducting the field trip opening and closing activities, showing the adult leaders and chaperones the sites where the learning-station rotation activities are to be conducted, demonstrating the first rotation of an activity and acting as a "floater", and overseeing the flow of the field trip with the educator in charge. The educators select their own field trip activities and pre- and post-trip activities from the *Salt Marsh Manual - an Educator's Guide*. A typical field trip has six learning stations (hands-on, environmental education activities are conducted at these stations) and the group consists of two educators, sixty five students, six learning station leaders, and six to eight chaperones.

Wetland Round-Up Sample Schedule

9:00	Bus arrives at the refuge
9:15 - 9:45	Habitat slide show - staff person
	Adult orientation - staff person
9:45 - 10:15	Station #1 (Mud Studies)
10:15 - 10:45	Station #2 (Beaks & Feet)
10:45 - 11:15	Station #3 (Where Have All The Wetlands Gone?)
11:15 - 11:45	Station #4 (Wetland Water Café)
11:45 - 12:10	Lunch
12:10 - 12:40	Station #5 (Salinity Testing)
12:40 - 1:10	Station #6 (Marsh Walk With Mini-Expedition)
1:10 - 1:30	Closing with students - staff person
	Clean-up by adults
1:30	Departure

With only one environmental education specialist at the Education Center and only one at the Visitor Center, the high quality of the field trip program and the number of students served would not be possible without the help of Student Conservation Association (SCA) interns and a few dedicated volunteers.

The volunteers and SCA interns learn the basics of the *Wetland Round-Up* field trip program and lead the first rotation of a particular activity for each field trip. In addition, they conduct opening and closing presentations, and provide support to educators and parent leaders by answering any questions they have about conducting activities at the learning stations. When not busy with visiting school groups, the interns and some volunteers help the staff with special projects, such as designing activity props, writing closing activities, conducting pre-field trip slide show presentations, and developing new field trip activities, which enhance the educational experience for the students. Thanks to Lee Lovelady, a refuge volunteer at the EEC, pre-field trip slide presentations were given to over 1,100 students attending school in Santa Clara County.

An Environmental Education Plan guides the Environmental Education Program . This Plan provides a direction for the EE Program and ensures implementation of the Plan's components as time and staff availability allows. The Plan is up-dated each fall.

In 1994, during January and September when field trip demand was slow, EE Specialists planned, reorganized and prepared for student visits. During the year, the *Trekking the Refuge* field trip continued to be a pilot program. On this type of field trip, educators and adult leaders conduct the field trip without staff help. To ensure accuracy of content the activities went through many revisions until the adult leaders fully understood the information they would be imparting to the students.

Due to piloting the *Trekking the Refuge* field trip program, the *Wetland Round-Up* field trips were conducted only two days a week at the VC. Two days each week were reserved for field trip groups piloting the *Trekking the Refuge* field trip program. The reduction of field trip days and cancellation of field trips due to inclement weather is reflected in the lower number of students attending field trips at both sites. Field trip cancellations were not filled and double bookings were not taken due to writing and preparing safety plans and materials and beginning the revisions for the 4th edition of the *Salt Marsh Manual - an Educator's Guide*. However, at the EEC in Alviso, this same period showed a greater number of students participating in non-traditional field trips in 1994 than in 1993. These groups are led by docents from local non-profit organizations who require only equipment set-up by the EE staff.

Reservations for the popular *Wetland Round-Up* field trips are taken twice a year. Reservations for the Spring session, conducted February through July, began on December 1, 1993. Field trips for the 1994 calendar year began on February 22. Reservations for the Fall session, conducted October through December, opened on September 12, 1994. Field trips for the Fall session began on October 11. Using this type of booking schedule, we had minimal field trip cancellations.

Adding the *Wetland Round-Up*, *Trekking the Refuge*, and "non-traditional" field trips from both the VC and EEC gives us a grand total of 7,258 students and 1,721 educators, volunteer leaders, and chaperones participating in educator-led field trips to the refuge in 1994.

Environmental Education Center Field Trips - Most of the groups using the EEC for a field trip participated in the *Wetland Round-Up* field trip program. 2,973 students and 716 educators, volunteer leaders, and chaperones visited the site on this type of educator-led field trip.

The EEC was also used by various student groups not participating in the *Wetland Round-Up* field trip program. 1,355 students, 110 educators and 178 volunteer leaders made use of the site for other educational activities such as docent-led field trips (conducted by non-profit organizations), teacher training, and scientific study (high school - college level).

The combined totals for usage by all education groups for 1994 are as follows: 4,328 students, 339 educators, 665 volunteer leaders and chaperones.

For the eighth consecutive year, there was a greater demand for the *Wetland Round-Up* field trip program than the staff was able to meet. With the exception of groups such as Santa Clara Audubon Society, Youth Science Institute and Environmental Volunteers of Palo Alto who use the site requiring only field trip equipment and no staff support, no double bookings were accepted. Fifty nine classes were placed on a waiting list and only two of those groups were given dates for field trips; over 1,800 students were turned away. Clearly, the demand for the program is not being met; however, the EEC cannot accommodate additional staff-supported field trips without additional personnel.

Visitor Center Field Trips - The *Wetland Round-Up* field trip program at the Visitor Center completed its seventh year at the end of 1994. A grand total of 2,475 students, and 650 educators and volunteer leaders participated in *Wetland Round-Up* field trips. (See page 10 for Wetlands Round-Up description)

At the VC, a pavilion and an old, former pumphouse serve as the hub for the daily field trip program. The pumphouse, used for conducting field trip activities, is also used by California State University, Hayward, field biology and ecology classes to conduct studies on the salt marsh. The pavilion, completed in 1992, is an important building for the *Wetland Round-Up* field trips; field trip opening and closing activities are conducted in the pavilion. Last year, wood shutters were built and installed on one side of the building by refuge volunteers. During 1994, refuge volunteers added doors and installed shutters on the remainder of the windows, allowing audio-visual programs to be possible in the pavilion. A closet was also built inside the Pavilion for storage of audiovisual equipment and field trip activity equipment.

Once again this year, there was a greater demand for the *Wetland Round-Up* field trip program than the staff was able to meet. Eleven separate groups, with 25-60 students per group, were placed on a waiting list. An estimated 580 students were turned away. It is evident that there is a greater demand for the program than is currently being met.

To help meet this demand, we designed and piloted the *Trekking the Refuge* field trip program in 1993. During 1994, we further refined the program with 2nd and 3rd pilot programs. The end of 1994 marked the end of the "piloting" of *Trekking the Refuge*. *Trekking the Refuge* field trips allow for double bookings at the VC, because they take place in a different area than the *Wetland Round-Up* field trips and they require minimal staff participation. *Trekking the Refuge* takes place on the Tidelands Trail, a 1 mile loop, with a maximum of 35 students at a time. The program is designed for grades 3-6. These field trips are run entirely by teachers. Educators lead the opening and closing activities with the entire class, and lead the class on a 45-minute trail walk guided by observation questions in a bingo style format. Educators recruit adult leaders to lead and chaperone three pre-selected, learning station rotation activities. All of the needed equipment for the opening and closing activities and station rotation activities is in day packs that the educators check-out and carry with them. There were 14 *Trekking the Refuge* field trips, with 112 educators and leaders, and 405 students participating in the pilot programs in 1994. Eventually, *Trekking the Refuge* field trips will allow for double bookings at the VC, because they take place in a different area than the *Wetland Round-Up* field trips and because they require minimal staff participation. (For descriptions of these field trips, see section H.2 Field Trips.)

During 1994, *Trekking the Refuge* was the recipient of a \$3,350 grant from the California Department of Education Environmental Education Grant Program. Written by Amy Hutzler and submitted by the San Francisco Bay Wildlife Society, the purpose of the grant was to purchase *Trekking the Refuge* field trip equipment, such as hand lenses, hydrometers, thermometers, etc., day packs to hold the equipment, laminating of field guides, and slide reproduction for the pre-visit slide show. The grant will also cover the cost of printing and binding the *Trekking the Refuge* guide.

Adding together the *Wetland Round-Up* field trips and *Trekking the Refuge* field trips gives us a grand total of 2,880 students and 762 educators and leaders participating in educator led field trips at the Visitor Center.

Summer Day Camps – Day camps for local children were conducted during the month of July at both the Environmental Education Center and the Visitor Center. The Refuge offered the camps free of charge to children entering the third, fourth, fifth and sixth grades in the fall of 1994. The two on-site EE Specialists cooperatively designed, planned and conducted both the Marsh-In camp at the EEC and the Junior Naturalist camp at the VC. The SCA interns assisted by adapting activities, making props, and setting up equipment. The SCA interns, along with several volunteer leaders enthusiastically led the campers through a variety of activities that included simulation games, guided imageries, wildlife observations, art projects and share circles. The theme for 1994, *Blast to the Past*, focused on how the San Francisco Bay area has changed through the years. It was our intent that, through environmental education, local children would become aware of the past events that helped shape the area in which they live in today. Each day focused on a different time period; the campers traveled via time machine. Activities ranged from how the landscape was shaped in prehistoric times, to the present situation of the wetlands around the San Francisco Bay. Geology activities, studying the Ohlone Indians, and visiting the ghost town of Drawbridge were highlights of the week.

Marsh-In Camp originated with the intent of building rapport with the children living in the local community of Alviso. Keeping with this philosophy, the thirteenth annual Marsh-In summer day camp was held for one session, Monday, July 25 through Friday, July 29. The camp was attended by eleven children. Whole-group and small-group activities were led by a group of zealous volunteers, consisting of two SCA interns and seven refuge volunteers, two of which were former Marsh-In participants and one was a high school student and former Junior Naturalist. The combination of enthusiasm and high leader-to-camper ratio allowed for the campers to receive a good amount of individual attention.

This was the eighth year of the five-day program with an overnight session. Once again, the camp was a great success. As a result of the summer camp program the children living in Alviso have an increased awareness of the many factors that impact the habitats of the refuge. Additionally, young persons who have participated in the summer programs have developed a greater sense of stewardship for the EEC. Two of our leaders (former *Marsh-Ins*) can attest to this.

Junior Naturalist Camp originated with the intent of providing children in the tri-city area (Fremont, Newark, Union City) with an opportunity to learn more about nature at the Refuge. Because of the popularity of the program, children must apply by sending a letter stating the reasons they want to become Junior Naturalists; this activity reduces the number of applicants. To ensure that the same children don't attend year after year, while others are turned away, preference is given to first-time participants. Camp was held for two sessions. The first was held Monday July 11 through Friday July 15, for students entering the 3rd and 4th grade in September. The second was held the following week, Monday July 18 through Friday July 22, for students entering the 5th and 6th grade in September. The camp was attended by thirty-eight children

combined from both weeks. Whole-group and small-group activities were led by two SCA interns and seven refuge volunteers, two of which were high school students and former Junior Naturalists, two were junior high school students, and three were adult volunteers.



Adult orientation before a Wetlands Round-Up field trip.



Leaders "hold the weight" of the salt marsh food pyramid at Summer Camp.



On their scavenger hunt, Marsh-Ins learn to identify plants.



Junior Naturalists walk to Drawbridge at Summer Camp.



Native plants are given a new home by students.



SCA Intern Kelly Park and a friend look for mud creatures on the video microscope.



SCA Intern Anne Marusza and volunteer Milo Anderson lead a California Indiagame of "staves" during Summer Camp.

H.3. Field Trips (Outdoor Classrooms) - Teachers

Field Trips -- In the San Francisco Bay Area, where many environmental education facilities and programs are available for educators to choose from, the Refuge Environmental Education Program is unique. We provide a facility where educators lead their own field trips. As in previous years, we conducted trainings for educators (teachers, youth leaders and outdoor recreation leaders) and adult learning station leaders (parents, aides, grandparents, etc.) interested in participating in the Refuge's educator-led field trip programs. Following the training and guidance we provide, educators plan their field trip, prepare the students and adult leaders and conduct the field trip. By having educators fully responsible and highly involved in their field trip, they are more likely to integrate the classroom curriculum with their field trip activities, providing students with a learning environment which extends into the classroom beyond the day spent on the Refuge. As a result, students achieve a more meaningful, in-depth experience. Over 1,721 students, their teachers and parents went through the field trip program.

Warwick Elementary School teachers continued to work closely with the refuge during the piloting of *Trekking the Refuge*. Warwick teachers attended orientations, brought field trips to the refuge, and made comments on the program. Warwick adopted the refuge and raised \$189 through candy sales, which they donated to the Refuge's Cooperating Association.

Wetland Round-Up Field Trip Orientations and Planning - The majority of each field trip orientation is spent on background information and learning how to lead the activities found in the *Salt Marsh Manual - an Educator's Guide!* The logistics of planning a field trip, as well as rules and regulations, are also discussed during the workshops. The staff is available for individual planning sessions should educators require assistance in planning their trips. A total of 10 Field Trip Orientation Workshops were offered at the Environmental Education Center in Alviso with 217 individuals participating. Five educators/leaders returned for a one-hour planning session to finalize the details of their field trip. A total of 10 Orientations were held at the Visitor Center in Fremont with 161 educators/leaders being trained and 2 educators returning for one-hour planning sessions. The confidence gained by educators and volunteer leaders at these orientations culminates in a successful field trip.

We continue to distribute the *Salt Marsh Manual - an Educator's Guide!* The 220-page guide was designed to facilitate discovery, learning, and enjoyment of field trips to the San Francisco Bay National Wildlife Refuge and is now in its third revised edition. It contains background information, area maps, planning and group management hints, classroom and on-site activities, and additional resource information. The activities in this guide are for grades K-8. The Educator's Guide is available free of charge to all educators and group leaders who attend a *Wetland Round-Up* Field Trip Orientation Workshop.

Revision on the 4th edition began in the fall of 1994.

Trekking the Refuge Field Trip Orientations - During the field trip orientations, the educator learns how to conduct pre-selected openings and closings, a trail walk, and three learning station rotation activities. In 1994, three orientations were held with

18 educators and 22 adult leaders attending orientations. During the orientations, comments and suggestions made by educators and adult leaders were written down in order to evaluate the 2nd and 3rd pilots.

The 2nd and 3rd pilots of the *Trekking the Refuge* Educator's Guide included an introduction to the Refuge, background information, pre-visit preparation hints, and on-site activities (the opening and closing activities, a trail walk, and the three learning station rotation activities). During 1994, a classroom activity section was added to the guide, with ideas for pre and post visit activities. A lending library with materials such as a slide show, a video, laminated posters, and laminated plant and animals pictures was designed to complement the *Trekking the Refuge* guide. The 2nd and 3rd pilots were copied and distributed in limited numbers (free to educators attending orientations). The 1st edition is expected to come out in the beginning of 1995.

Educational Resources -- The Audio Visual Lending Library for the Environmental Education Program exists at both sites. VHS videos are available for educators to check out for 2 to 3 week periods.

Who Did the Owl Eat? depicts a barn owl's hunting and eating habits, regurgitation of an owl pellet and directions on how to dissect a pellet. Appropriate for grades first through sixth, the video is accompanied by charts, curriculum, and script. Educators are encouraged to copy the tape and charts to keep in their school curriculum library for future use. Other refuges have copied the tape to lend out to educators.

The 25-minute video about the San Francisco Bay and Delta, *Secrets of the Bay*, shows the history of the bay and its sometimes conflicting interests. This video is appropriate for fourth grade through college.

Fabulous Wetlands is an 8-minute video that takes a humorous, yet informative look at wetlands -- what they are, how important they are, and what we can do to protect them. Perfect for pre-field trip preparation, this video is appropriate for third grade through high school.

A Home for Pearl and accompanying guide is a video that teaches about wildlife habitats. It is divided into four parts: two 15-minute segments and two 20-minute segments. Each can be viewed as a separate unit incorporating supplementary activities provided in the guide. It is appropriate for first through sixth grades.

Do your Part! is a 19-minute video featuring students teaching each other what they can do to help preserve the wetlands. It is appropriate for grades 3-8.

In Celebration of America's Wildlife is a 28-minute video that features success stories in wildlife conservation. It is appropriate for grades four through adult.

Tinka's Planet is a 12-minute video that introduces children to the need for recycling. It is very good for grades K-3.

In addition to classroom videos, several training videos are available through the Audio-Visual Lending Library. Educators can show the videos to adult leaders as

training for an upcoming field trip. New in 1994 is the "*Wetland Round-Up* field trips at the VC" video. Filmed and produced by Bernie Nillo, a refuge volunteer, this video is a 12-minute look at our field trip program, with an introduction to the refuge and our Resource Management Objectives, and actual footage of a field trip in action. It can be used as a training supplement for those leaders and chaperones who were not able to attend an orientation workshop. Other videos include Brine Shrimp Lab at the Environmental Education Center, Brine Shrimp Lab at the Visitor Center, and Mud Creature Study at the Visitor Center. These training videos consist of background and "how to" information and footage of the activity during an actual field trip.

Educator Workshops -- We conducted several environmental education workshops in 1994. The *Adopt-an-Endangered Species* workshop was cosponsored by Randall Museum in San Francisco. Educators learned how their schools can adopt a local endangered species and become part of the California Endangered Species Education Program. The National Audubon Society, the California Department of Education and the Department of Fish and Game sponsored this program. The workshop outlined how to involve students in this action-oriented, interdisciplinary program. Students practice critical thinking and communication skills as they learn about their species and develop a plan of action to educate and involve their community in preserving its habitat. An implementation and resource guide was given to each participant.

As the Water Flows workshop demonstrated exciting hands-on activities about water and aquatic habitats. How do everyday actions affect these habitats? How is everyone's front yard connected to the Bay? Why are wetlands important? This workshop focused on problem-solving actions that students could take to protect water resources and aquatic ecosystems. Participants received The *California Aquatic Science Education Consortium* curriculum guides, *Water Inspectors*, *Fresh Water Guardians*, *Wetland Protectors* and *Creek Watchers*. The Santa Clara Valley Water District paid the workshop fee for Santa Clara County educators.

The *Same Place, Different Time* Indian workshop offered an opportunity to look into a sustaining culture of the past. The material objects of a culture reflect the values and lifestyles of a people and are an excellent vehicle for teaching culture and natural history. An objective of environmental education is to promote a caring and nurturing attitude in children about the natural world and the importance of habitat preservation as reflected in Native California culture. A total of 65 educators attended these workshops.

Educational Courses and Programs -- San Francisco Bay NWR personnel taught portions of the following courses:

National Environmental Education Course -- (Office of Training and Education)
Under-Valued & Under-Utilized Tools for Resource Managers.

This course was offered by the U.S. Fish & Wildlife Service, Office of Training and Education at Laurel, Maryland in May and November of 1994. The course was open to all interested Service personnel, and was attended by supervisors, refuge managers, project leaders, and administrative personnel from all levels of the Service.

The goal of the course was to provide an awareness of the value of education and outreach in the Fish & Wildlife Service. Participants learned about education and outreach strategies and how these strategies could help achieve resource management objectives of the Service. Fran McTamaney presented the session on *Strategies That Work!- San Francisco Bay National Wildlife Refuge*. The main focus of her session was showing how each activity conducted at the Refuge met a resource management objective (RMO). A work sheet used in the session, helped participants to identify their RMOs .

National Environmental Education Course -- (Office of Training and Education)
Working With Children and Their Leader

The objective of the course is to work with formal and non-formal education groups in addressing Service issues and encouraging environmentally responsible behavior by young people. Service employees are introduced to general education practices and encouraged to work with local schools and youth organizations in project development. The course will be conducted in July of 1995. Fran McTamaney, co-leader of this course, helped conduct the first planning meeting in October of 1994. The course team decided to have a planning and evaluation model tailored for the course. Chris Parsons, a consultant on designing such models, will work with the team to develop the model.

California Aquatic Science Education Consortium -- In 1990, a consortium of agencies, organizations, and citizen groups was established for the purpose of encouraging, supporting, and enhancing aquatic (fresh and marine) education programs for informal groups in the State of California. The initial formation of *The California Aquatic Science Education Consortium* was funded by a grant from the National Science Foundation. Five aquatic curriculum guides were developed: *Plastic Eliminators, Water Inspectors, Fresh Water Guardians, Wetland Protectors and Creek Watchers*. SFBNWR is a member of the Consortium and uses activities from these guides when conducting educator workshops and sessions for workshops on and off-site.

The Environmental Education Program Coordinator served on a curriculum development committee for the new *Grassland Resource Conservation District's Wetland Education Program*. The purpose of the program is to increase public awareness of our local wetlands and the integral part played by agricultural interest in establishing habitat for wildlife. When the Center is completed in 1995, it will accommodate school groups 9 months of the year. The EEP Coordinator reviewed a draft curriculum, provided information on relevant field trip and classroom activities, and gave suggestions for types of field equipment and sources for purchasing equipment.



SCA Intern Nancy Golden points out habitats during Trekking The Refuge



Educators participate in a Marsh-Loss activity at the "As The Water Flows" Educator Workshop



Two educators closely examine salt marsh plants during a "Mini-Expedition" field trip activity.



Amy Hutzel, environmental education specialist, helps put together a food pyramid during a Trekking the Refuge activity.

H.4. Interpretive Trails

The Refuge has two trails with interpretive wayside exhibits. These displays describe the habitat, the cultural history, the ecological dynamics and geology of the areas that visitors walk through. They are entertaining, easy to read, visible without being intrusive and serve as an important supplement to our interpretive effort.

The self-guided trails are especially important during hours when the Visitor Center is closed. Before 10 am, and from 5 pm to sunset trail use is often heavy. Refuge volunteers patrol the trails, talking with visitors and providing more information to people as needed. They also pick up trash and make note of the wildlife they see.

The Refuge's main interpretive trail, the Tidelands Trail, is registered as a National Recreation Trail in the National Trails System.

Butterfly Garden -- We began work on a new native plant garden at the Environmental Education Center which will attract butterflies, and demonstrate the connection between high quality habitat and abundant wildlife. The garden will be utilized in the weekday field trip program and the weekend public interpretive program in the future. It will provide a unique opportunity to investigate the interactions of nature.

H.5. Interpretive Routes Nothing to report.

H.6. Interpretive Exhibits, Demonstrations, and Special Events

During 1994, 117,629 visitors participated in interpretive activities at the Refuge. Of these, 110,146 took advantage of our self-guided interpretive trail, viewed exhibits, or visited the Visitor Center or the Environmental Education Center to watch films or videos and look at the educational displays. The remaining 7,483 participated in the numerous naturalist-conducted programs such as walks, van tours, talks, slide presentations, astronomy programs, or bicycle trips.

Every day brings a steady stream of inquisitive Refuge visitors past our Visitor Center reception desk. On weekends, the Environmental Education Center also receives drop-in visitors. Our volunteers who daily staff the desk are knowledgeable and always willing to help out. We would not be able to present the variety of programs we do without them.

The natural history of the Refuge was well represented in our 1994 programs with topics such as salt march ecology, insects, birds, seasonal wetlands, endangered species, edible plants, geology, and mammals. Our volunteer staff was quite active during 1994, giving 98% of our weekend public tours and interpretive programs. A number of programs of importance given by local experts, including the geological history of the San Francisco Bay and the Endangered Species Act, were well

attended by the public. For complete descriptions of these programs, look in the calendar section of the *Tideline* newsletters included at the back of this narrative.

Our program audiences were as diverse as the program topics that were presented. Audubon chapters, day care centers, garden clubs, historical societies, scout troops, community groups, senior centers, teachers' associations, college classes, and women's organizations, among many others, took advantage of the available programs. The greatest demand for naturalist-led activities, however, came from families.

Among the most popular activities during 1994 were the tours of Drawbridge, an abandoned hunting and fishing community in a salt marsh setting. The dilapidated town stands as a reminder of the consequences of human destruction of the native environment. This was the theme as more than 400 people visited the area during tours offered on Saturdays from May through October. Other weekday and weekend tours were arranged by special request for walking clubs, photography groups, and other organized groups.

Many off-site events helped to increase recognition of the Refuge and its programs. Staff members and volunteers attended information booths at these events, where they distributed literature and in some cases led environmental education activities. The Bay Area Environmental Education Resources Faire for K-12 educators, the Santa Clara Valley Audubon Society Education Day, Berkeley Bay Day, and many other special events all provided opportunities for the Public Use staff and volunteers to reach out to the public. For example, two refuge interns visited Warwick Elementary School, and gave endangered species puppet shows for nearly every class in the school, or a total of approximately 600 students.

Redwood Environmental Education Fair -- Annually, environmental educators and volunteers from San Francisco Bay NWR prepare for and conduct the EE presentations and activities at the Redwood Environmental Education Fair in Humboldt County. In 1994, one Refuge EE Specialist and two Refuge interns participated, supporting the staff at Humboldt Bay NWR which does not have a public use staff. The fair was held on May 27, 1994. Four classes of approximately 30 students each attended the four refuge sessions. The students were all in fourth or fifth grade. Each session was 45 minutes long, which included a ten minute opening discussion, two 15 minute activities, and a five minute closing discussion.

The staff person and interns led a discussion about wetland loss and the importance of wetlands for endangered species and migratory birds. The students then had the chance to taste pickleweed collected at the refuge and to see eelgrass and photos of Black Brant. The classes were then split into two groups of about 15 students each, to allow more personal contact with the students. Each group participated in both *Where Have All the Wetlands Gone?* (a wetland habitat loss activity with a focus on endangered species) and *What's for Dinner?* (a bird beak adaptation activity). These two hands-on activities are used in the field trip program at SFBNWR. A wrap-up discussion at the end focused on how students could help protect wetlands. The presentations met Humboldt NWR's resource management objective that promotes

understanding of the importance of wetlands and the need to preserve and restore wetlands for endangered species and migratory birds.

Throughout the year, staff members spoke to numerous civic, business, church, and social groups, providing nearby communities a service while disseminating information about the Refuge and its resources.

Bay Area Environmental Education Resource Fair -- On Saturday, January 14, at the Marin Civic Center in San Rafael two environmental education specialists, two interns and two refuge volunteers attended the popular Bay Area Environmental Education Resource Fair. The focus of the fair was to bring people closer to the resources and issues surrounding our natural world. It provided science and ecology workshops and exhibits for educators K-12. The staff and interns worked at a booth, handing out refuge information (such as refuge brochures, *Tideline*, EE brochures, etc.), selling items from the bookstore, "playing" Salt Marsh Survival with passerby's, and talking to educators about refuge EE resources. Staff and interns also attended several of the workshops offered at the fair and visited other organizations' booths.

Santa Clara Valley Audubon Society Education Day -- On March 5, two Environmental Education Program interns attended the Santa Clara Valley Audubon Society Education Day, where they led bird activities for this fair featuring California wildlife and local habitats. The focus was on environmental education programs for K-6th grade students, parents, and teachers. The event was held at McClellan Ranch in Cupertino: Santa Clara Valley Audubon Society headquarters.

Special events were held at the Refuge during 1994. The following briefly describes these programs and events:

Endangered Species Poster Contest -- The Annual Endangered Species Poster Contest is a traditional annual event that encourages elementary students to study and discuss endangered species in class, and then send in posters that illustrate their feelings about their favorite endangered species. Announcements that were sent to every public and private school in Newark, Fremont and Union City brought in hundreds of creative posters, many of excellent quality that conveyed very important messages about conservation of endangered species. John Steiner presented the awards to the winners. First place winners and their parents received entry passes to Marine World Africa/USA, an exotic animal oriented amusement park; second place winners and their parents received passes to the San Francisco Zoo; and third place winners and their parents received passes to the California Academy of Sciences. Once again, this was a very popular part of our Earth Day events.

Earth Day -- Earth Day was held at the Refuge on Saturday, April 23. This year's theme was "You're the Solution." Hourly programs, children's activities, and the environmental information fair helped visitors learn how they could help find a solution to many of the environmental problems of today. (Please refer to the flyer at the back of this narrative.) Despite a torrential rainstorm, over 500 people came and enjoyed the day's fun.

The hourly programs included presentations by Refuge Wildlife Biologist Elaine Harding-Smith on the effects of pollution on native wildlife; by Law Enforcement Officer Rose McCloud on illegal trade of endangered animals and their products; by Refuge Volunteer and Native Plant Nursery Manager Harry Sanders on the wonderful variety of plants available at the Nursery; and by the Alameda County Home Composting Program on composting at home. SCA interns Nancy Golden and Kerry Pasquerelli led a puppet show about "Salty" the Salt Marsh Harvest Mouse to educate the children about the endangered species found on the Refuge and what they can do to help.

Children's activities included a brine shrimp discovery station led by Volunteer Haven Thompson, a face painting station led by Volunteer Tooky Campione, and a nature walk led by Volunteer Carolyn MacIntyre. A quiz was also developed to encourage the children to attend the programs and ask questions of the group exhibitors. Those children who made an honest effort were helped by Volunteer David Fries to make a button commemorating the day's events.

Nine different environmental organizations from around the Bay Area staffed informational tables. The groups included the Sierra Club, South Bay Anglers for Environmental Rights, Alameda County Urban Runoff Clean Water Program, Alameda County Home Composting Program, Bay Area Amphibian and Reptile Society, Citizens Committee to Complete the Refuge, Browning-Ferris Industries, City of Fremont Public Works, and the Tri-City Ecology Center.

The Native Plant Nursery held a plant sale and a symposium to educate the public about native plant species, how to use them in landscaping a home, and how to care for them.

California Coast Clean-Up Day -- For the seventh year, the Refuge celebrated COASTWEEKS by participating in the California Coast Clean-Up Day on Saturday, September 17, 1994. The Refuge organized clean-up sites at six different locations on the Refuge: the Dumbarton Fishing Pier, Shoreline Trail, Marshlands Road, the Newark slough boat launch, Coyote Creek Lagoon Trail, and the Environmental Education Center. Refuge volunteers and staff were on hand to register volunteers, distribute bags, drive vehicles and do everything else needed to make the clean-up a success. Approximately 350 volunteers from local communities turned out for the three and a half hour clean-up. Almost 3.5 tons of debris were collected from the sites on the Refuge. Plastic, glass, and aluminum were collected separately and recycled by the East Bay Conservation Corps. Trash bags were provided by the California Coastal Commission, California Department of Transportation, and the Refuge. East Bay Disposal and BFI provided debris boxes. The City of Fremont and Alameda County provided pick-up trucks, a front-end loader, a flatbed, and drivers.

Registrants for the clean-up received a coupon to be redeemed afterwards. Tickets to Marine World/Africa USA and coupons for Ben & Jerry's ice cream were given away as a thank you to those who helped.



Nancy Fries, Interpretive Specialist, made sure that there were Earth Day activities for everyone.



The Endangered Species Poster Contest created a lot of interest in "critters" at local schools - over 350 entries!



California Coast Clean-Up Day went very well at the
Environmental Education Center

H.7. Other Interpretive Programs - 1994

In spite of all of the efforts that we made during the year to contact the public, we know that there are many thousands of people out there who don't know about us or whose interests do not include endangered species, wetland preservation, migratory birds or anything else along those lines. Reaching *these* people is one of the most challenging tasks with which the public use staff is confronted. People first need to know that the Refuge exists, then the next step in reaching them is getting them out to the Refuge where they can see with their own eyes what sort of job we are doing and what needs to be done in order to protect wildlife habitat.

In order to get the word out about us and to ultimately get people to the Refuge, the public use staff participated in some non-traditional education and outreach efforts. The following briefly describes what projects were undertaken in 1994.

Tideline -- Foremost among our non-traditional interpretation efforts was the production of a quarterly newsletter, *Tideline*. A copy of each issue of the newsletter is included at the back of this narrative. In 1994, *Tideline* was distributed quarterly to 23,000 Bay Area households, school, businesses, churches, hospitals and libraries. It was considered to be our very best means of communicating our program schedules, announcements, news stories, advertisements and editorial comments. In fact, many of our programs were filled to capacity by *Tideline* recipients. *Tideline* has been used as a text at a training course for urban managers at the National Park Service's Training Center at Harper's Ferry in West Virginia. It is also used as a supplement to formal text

Center at Harper's Ferry in West Virginia. It is also used as a supplement to formal text books in many high school biology classes. We repeatedly get requests from biology teachers for subscriptions for that purpose.

Tideline, which is financed by San Francisco Bay Wildlife Society, was printed on recycled paper. Our mailing list was managed by Volunteer Howard Collins, who coordinated additions, deletions and changes to the list. Volunteers also helped with applying address labels to the issues before mailing. Without volunteer assistance, *Tideline* would not be possible.

Native Plant Nursery -- The San Francisco Bay Wildlife Society continued to manage a Native Plant Nursery that grows plants to enhance native habitat on this and other Refuges. It was also established to serve as a vehicle for reaching out and contacting non Refuge visitors and thus bring them to the Refuge. Over 200 species of native herbs, shrubs and trees were grown in the nursery, entirely through the efforts of volunteers. The Native Plant Nursery is managed by Harry Sanders, a volunteer who is accredited as "Master Gardener" through the University of California Agricultural Extension program. The Nursery's grower is *Lisa Higaki*, who holds a bachelor of science in Tropical Horticulture from the University of Hawaii.

Native Plant Day -- This fall we held a Native Plant Day with guest speakers, workshops, demonstrations, and the sale of California native plants. The event attracted several hundred visitors who came to the refuge to learn about native plant horticulture, and went back home at the end of the day knowing about the National Wildlife Refuge System, the importance of wetlands, and the value of planting with native species. A copy of the flyer advertising this event is included at the back of this narrative.

Avocet Festival -- The Avocet Festival annual arts and crafts sale sponsored by the San Francisco Bay Wildlife Society was held in October. A complete description of this event may be found later in this narrative under section H.18. - Cooperating Associations.

Artist's Reception -- During 1994, the Refuge held four receptions for local artists who exhibited their original artwork in the Visitor Center auditorium. These exhibits portray habitats and wildlife found on the Refuge and around the San Francisco Bay area. Visitors have an opportunity to meet and talk with artists who devote time and talent to capturing the beauty of Refuge wildlife. Through the artwork, visitors can experience the beauty and wonder found in the habitats of the Bay, and come to better understand the need for conservation.

The receptions were advertised in *Tideline*, and were well attended. Many people who came to the receptions were first time visitors to the Refuge. The San Francisco Bay Wildlife Society provided refreshments.

Foreign Delegations -- The Refuge hosted a delegation of two Russian military officers, a Mongolian government official and a translator, for three weeks during June and July. This group was part of an arrangement between the National Wildlife

Refuge System, the Service's Office of International Affairs, the U.S. Department of Defense, the Russian Ministry of Defense and the Russian State Reserve Network.

The Public Use Division arranged visits and set up the travel and lodging details for this group which resulted in visits to the Refuge, to Sequoia/Kings Canyon National Parks, San Francisco Presidio, Point Reyes National Seashore, Alameda Naval Air Station, Point Mugu Naval Base, Concord Naval Weapons Station, U.S. Naval Postgraduate School, and Monterey Bay Aquarium. The group learned about law enforcement, volunteer program management, interpretation, maintenance management, fire management, environmental education, and other aspects of refuge management. They were particularly interested in acquiring knowledge which will help them transform Russian military bases into refuges and parks.

We kept them busy the whole time, thanks to a great deal of cooperation from the many offices mentioned above. The visit was valuable to them, and Russia's wildlife will benefit as a result of their whirlwind tour.

Environmentally Friendly Lifestyle was held for 54 visitors. The City of San Jose's

Maze and Storm Drain/Sanitary Sewer model were set up. The Maze filled the auditorium with colorful panels that challenged children to make the right choices for a healthy environment. In addition there were several other exhibits on energy and water conservation and pollution prevention. Many visitors viewed a pollution prevention slide show and took home water conservation kits and pamphlets.

Kids Day was a popular special event held in February. Activities included owl pellet dissection, brine shrimp lab, animal track printing, a feather and oil activity, and Ohlone Indian games. There were also live snakes to hold and outdoor guided walks. Volunteers helped lead the activities for over 100 participants. Several Spanish speaking volunteers helped to make bilingual activities available.

International Migratory Bird Day was held in May. Twenty Refuge volunteers and five environmental organizations participated. Those included were: Wildlife Center of Silicon Valley, Coyote Creek Riparian Station, Santa Clara Valley Audubon Society, Wild Bird Center, and San Francisco Bay Bird Observatory. Despite a low public turn out of 50 people, it was a day filled with many activities and presentations on various aspects of migratory birds.

Nature Walks -- The most frequently given walk at the Visitor Center was the "Tidelands Trail Nature walk", a 2-hour walk that gives the visitors an overview of the habitats surrounding the Visitor Center.

The most popular walk at the Environmental Education Center was the "Marsh Walk on the Boardwalk", a one hour nature walk providing an overview of the habitats surrounding the Center. The values of these habitats to wildlife and the Refuge's role in preserving and managing them were discussed. Hands-on activities, such as looking for animal tracks and scat and collecting water samples containing various tiny water critters, were often included for interested participants.

Birding walks were also very popular. These two hour walks usually took place in the morning with an average of 10-15 participants. Most people that attended the walks were new to birding, and many took advantage of the binoculars we have to loan.

On the "Edible Plant Walk", visitors learned which plants of the marsh and uplands are edible and which are poisonous. We tasted samples of the former, including pickleweed and fennel seeds, as well as products made from the plants, such as horehound candy and elderberry jam. This walk was popular with both children and adults.

Several other guided tours were given on the trails surrounding the Environmental Education Center. There was a 6-mile levee hike and a bike trip. Visitors viewed the wildlife of the area from the salt pond levees that surround the south end of the bay. There were two Walking Tours to Drawbridge in which participants saw the ghost town and learned about its history, including how the old hunting town failed because of the destruction of the surrounding habitat.

Slide Shows -- The "Drawbridge" slide show was the most popular program in this category. The volunteers who present the shows do an excellent job of relating the history of the ghost town. Visitors always leave with the understanding that the old hunting village failed because the surrounding habitat was destroyed.

"The Life and Times of the California Clapper Rail" was a very popular program. Katherine Rambo, nature photographer and naturalist, discussed the habits and habitat of this secretive bird found only in the salt marshes of the San Francisco Bay.

"Wildlife Stories" was a program which focused on the wildlife that can be found in and around the Bay Area. Joe Galkowski is a professional nature photographer.

Tours -- The ever-popular Drawbridge Tours were conducted every Saturday during the dry season. This tour is not publicized, but earns it's popularity through word of mouth advertising. Volunteer tour leaders focused on the fact that the ghost town of Drawbridge failed because of the degradation of the saltwater marsh environment, which is a lesson even for today.

Volunteer- led bike tours were also very popular. This is an excellent way to tour the levees in the dry season to learn about the Refuge.

One of the best places to view birds during the fall migration is along the levees. The Refuge Van Tour made this spectacular display accessible to people who can't hike or bike that far.

"Railroad History Tour of the Refuge" traced the route of the old South Pacific Coast Railroad, giving history buffs and train buffs alike a terrific tour.

Additional Interpretive Programs -- Investigating the life in a salt pond habitat is fascinating. To take advantage of this, several "Brine Shrimp Labs" were conducted on weekends throughout the year. In this program visitors collected brine shrimp from a salt pond . They later returned to a classroom to closely observe these fascinating

animals. Participants learned about the importance of the brine shrimp as a food source for migrating and local birds.

"Geotalk! Geowalk!" was a two-hour program involving a slide show and a hike that provided visitors an opportunity to learn all about the geology of the San Francisco Bay area, but especially the Refuge.

"Weird Science" is a special program given around April Fool's Day. Kids and their parents participate in a variety of science activities.

Visitors interested in astronomy participated in our "Starstruck!" night program, which begins with a slide show and lecture on the visible stars visible of that night. Afterward, participants move outside and use telescopes to view the stars they learned about during the lecture. The volunteers leading this program provide high-end telescopes for special viewing opportunities, and participants also used their own telescopes. "Solar Viewing", an informal program presented once a month, makes use of a telescope with a special filter to view the sun and its sun spots.

Several Ohlone programs were given. A talk and slide show portrayed the lifestyle of the Ohlone Indians. Afterwards participants investigated some Ohlone style artifacts from the Environmental Education Program's collection. When kids attended, some Ohlone Indian games from the Program's collection were also played.

"Pollution Solution" was a regularly scheduled program designed to teach about the prevention of non-point source pollution. Participants discussed which products can be used to help reduce the pollution they cause. They learned of the importance of not dumping pollutants in streets or storm drains which drain directly into creeks and the bay. They also talked about the household hazardous waste disposal sites where products containing metals and hazardous chemicals should be taken.

"Protectors of the Bay" used a functional model of a city by the bay which was donated by the Santa Clara County Non-point Source Pollution Control Program for this program. It was used to show that household products and hazardous materials such as oil placed in the streets flow down storm drains directly to creeks and ultimately into San Francisco Bay. Participants discovered that this is a major source of pollution in the Bay. Another activity simulated how these pollutants concentrate to harmful levels as different organisms consume them. Participants also evaluated photos, pointing out which ones showed activities that contribute to polluting the Bay, and which prevented pollution.

"An Introduction to Bird Watching" combined a slide show and lecture with practice in the field to get new birders started in this increasingly popular leisure activity.

"Decorating For The Birds" was a program that encouraged people to make Christmas decorations that had the added benefit of being edible by wintering birds. In the "Christmas Wrap Making" program participants helped conserve resources by making wrapping paper out of old paper bags. The "Salt Marsh Gifts" walk began with a walk through the salt marsh to investigate its "gifts", or beneficial characteristics. The walk ended with opening actual presents that represented the "gifts" discovered outside. In this series of programs visitors

celebrated the holiday while gaining a greater appreciation for the natural resources of the refuge.

The "Discovery Packs" were redesigned by refuge staff in 1994, with a new activity guide and new equipment and day packs. Discovery Packs are kept in the Visitor Center and can be checked out by visitors (such as families, scout groups, etc.). The person who checks out the pack leaves their driver's license with the volunteer at the desk. When they return the pack, they clean the equipment, count items issued, and retrieve their driver's license. The packs have activity ideas for investigating the habitats at the refuge, such as mini-expedition, brine shrimp lab, and bird bingo. In 1994, a total of 104 people checked out Discovery Packs.



Earth Day celebration, Kids , and a very big snake!



Native Plant Nursery Manager Harry Sanders helps a buyer.



Law Enforcement's Rose McCloud brought her Big Cats to Earth Day.



Volunteer Haven Thompson teaches visitors about brine shrimp at Earth Day.

H.9. Fishing

Public use of the Dumbarton Point Trail (south end of the fishing pier) and the Shoreline Trail (north of the fishing pier) continued to increase. Use of the Dumbarton Fishing Pier stayed about the same as last year. There were approximately 38,000 angler "uses" at the piers and the surrounding fishing areas in 1994.

Fishing from or near the piers has netted a variety of fish: leopard shark, sand shark, bat ray, shiner surf perch, kingfish, bullhead, and the elusive striped bass, white sturgeon and salmon.

H.10. Trapping - Nothing to report.

H.11. Wildlife Observation

The opportunity to view wildlife in its natural habitat attracts many of our visitors. The Refuge offers a variety of habitats such as salt marsh, sloughs, extensive mud flats, open water and upland coastal chaparral, grassland and trees. This range of habitats

provides an ideal area for visitors to explore, on their own or with our naturalists, when seeking local wildlife.

Some visitors participated in van tours or canoe trips on Mallard Slough and Triangle Marsh, where marsh-nesting and feeding birds were easily seen. Most visitors walked or biked the many miles of Refuge trails on their own, viewing resident nesting birds, migrating and wintering shorebirds and waterfowl, and young birds during the spring and summer months. Bird watchers revel in these opportunities. In addition, many nature study groups led field trips to our Refuge, and the Audubon Society once again conducted its annual Christmas bird count here.

One of the most popular sites for local bird watchers was the restored tidal area, Avocet Marsh, where great numbers of shorebirds and migrating waterfowl gather to feed. There is also a peregrine falcon commonly sighted here.

In June, the Refuge participated in the 6th Annual Butterfly Count sponsored by the American Butterfly Association. The event drew a number of seasoned, professional lepidopterists as well as first-time amateurs. The counters spent the day searching out butterflies near the Visitor Center and EEC, as well as a nearby riparian corridor, and noted approximately 18 species. It was great fun for everyone and will be repeated in 1995!

H.12. Other Wildlife Oriented Recreation

The First -Ever Nature Company School of Birding Seminar and Field Trip: WildBird Magazine, Nikon Binoculars and The Nature Company joined the Refuge in hosting a birding seminar at the Hyatt Regency Hotel in San Francisco. The Friday evening seminar at the Hyatt Regency included several renowned speakers on birding and a slide presentation titled "Wildlife Island in an Urban Sea" by Chief of Public Use, John Steiner. The one hundred twenty participants visited the refuge the next day, where they broke into three groups for an all-day tour of Refuge wildlife.

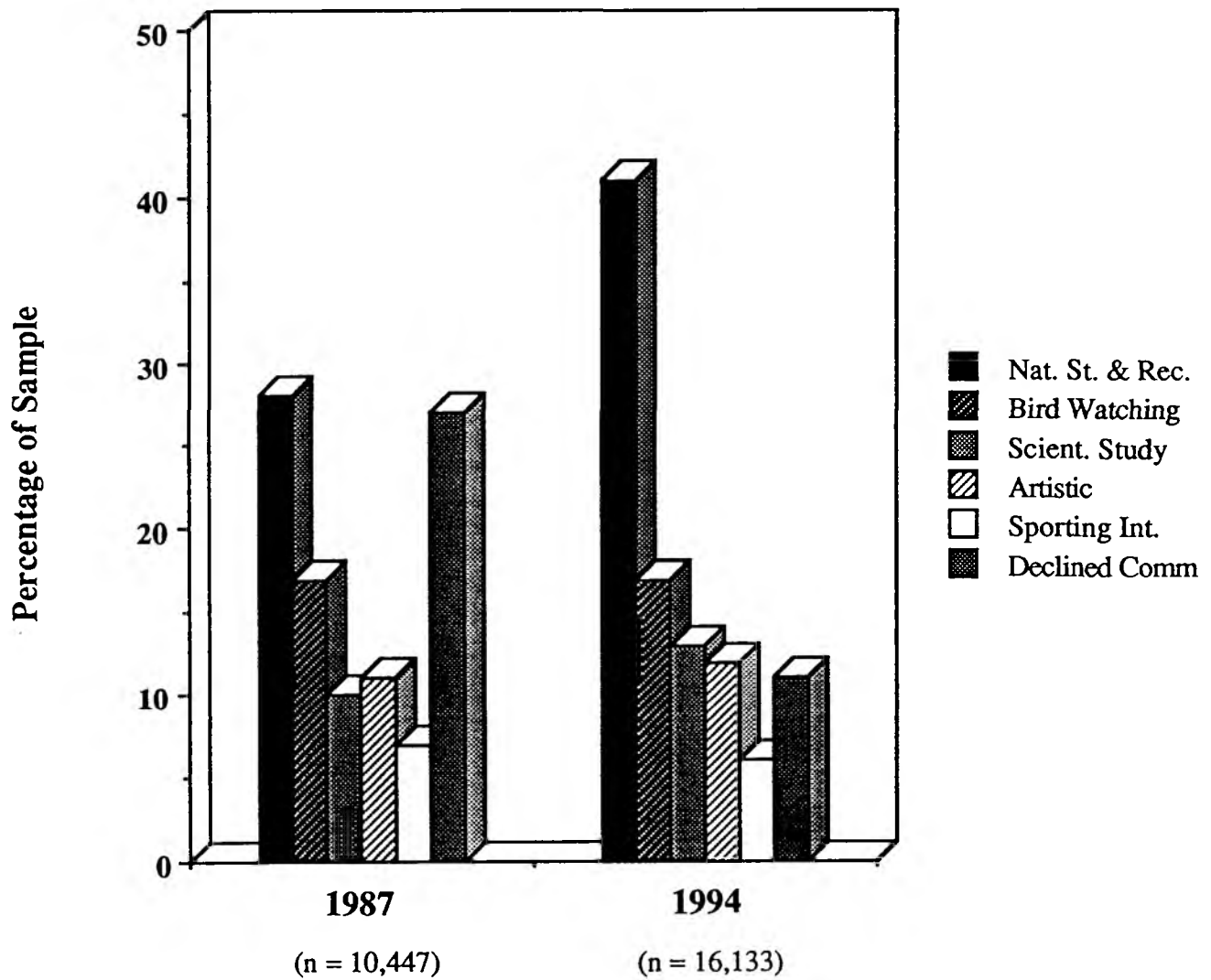
H.13. Camping - Nothing to report.

H.14. Picnicking - Nothing to report.

H.15. Off-Road Vehicles - Nothing to report.

H.16. Other Non-Wildlife Oriented Recreation - Nothing to report.

Visitor Interests at San Francisco Bay N.W.R.



H.18. Cooperating Associations

San Francisco Bay Wildlife Society completed its seventh full year of operation in 1994. This non-profit corporation helps sponsor and finance education and outreach programs at the Refuge. The Society raised funds in a variety of ways throughout the year. Wholesale and retail sales of books, pamphlets and theme-related items brought in \$26,003. Membership dues, donations and interest amounted to \$ 14,377. Our art show, native plant sale and seminars grossed \$16,414. Total receipts for fiscal year 1994 were \$ 110,366.

The cost of doing business was very high. We had to pay many bills with this money such as, purchase of the books we sold (\$15,727), and sales tax (\$ 2,023). Even after expenses, we could still print four issues of our newsletter, *Tideline*, (\$ 11,757), fund a petty cash fund for the environmental education and outreach program (\$ 2,808), buy hundreds of dollars worth of capital equipment for the and Public Use program (\$ 994), and support the Public Use program with a great many miscellaneous purchases such as administrative supplies, film processing, and operational supplies. The Society also hired a part-time administrator to handle the office work of a growing business.

We continued operating sales outlets at Klamath Basin Refuge and Sacramento Refuge during 1994. In addition, the Wildlife Society added Malheur NWR. Thanks to the efforts of the staff and volunteers at Klamath Basin and Sacramento, sales increased at both refuges again this year. Klamath Refuge had gross income of \$25,681 and Sacramento Refuge grossed \$7,048. Malheur NWR got off to a very good start with gross income of \$5,406 in six months of operation.

Our fourteenth annual Avocet Festival was held in October. Twenty-eight artists made sales totaling \$7,831, 45% of last year's total. Net proceeds to the Society were \$1,360. The associated environmental fair, supported by sixteen Bay Area groups, was very popular with visitors, and 31 raffle prizes (up from 16 last year) donated by local businesses brought the Society \$524. Although publicity provided by our sponsors, radio, television, and local major circulation newspapers appeared to be as good as that in 1993, attendance was approximately half, resulting in poor artists sales. The earlier date, plus unseasonably warm weather, were probably contributing factors to the lower turnout.

In the spring, summer, and fall of 1994, the San Francisco Bay Wildlife Society in cooperation with the U.S. Fish and Wildlife Service sponsored the sixth season of "Explore the Wild" seminars; these seminars were offered as adult-level courses:

Guided Natural History Kayak Tour of Elkhorn Slough
Guided Natural History Kayak Tour of Monterey Bay
Guided Natural History Kayak Tour of Salinas River
Natural History of Ano Nuevo
Natural History of Grizzly Island

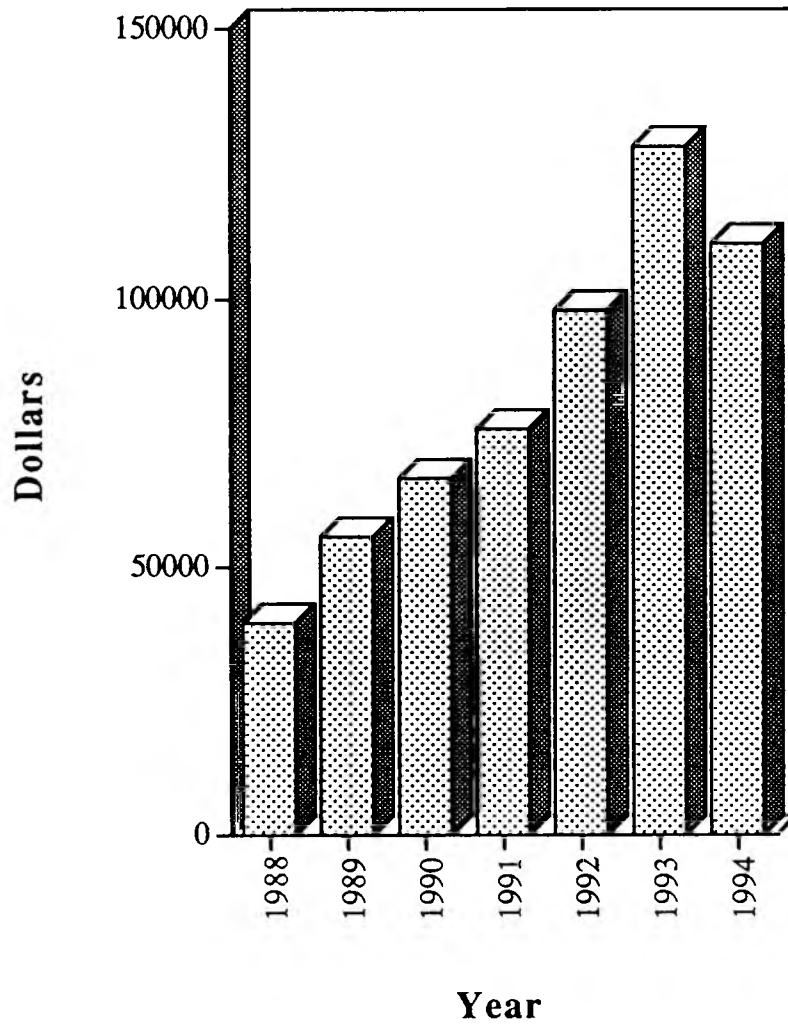
The number of participants ranged from 8 to 14 per seminar, with a total of 57 participants. The seminar series netted \$ 252.00.

The San Francisco Bay Wildlife Society plays a very significant role in the operation of the Refuge's Education and Outreach efforts. Like most programs at the Refuge, the Society itself could not exist without the many hours contributed by volunteers. Volunteers help with all Society events, like the art show and native plant sale. They also sell merchandise in the bookstore and encourage people to become members of the Society. Sid Hollander again served as director of the Art Show coordinating all aspects of that fund-raiser. Stan Brown handled the entire Society membership operation and Howard Collins maintained the mailing list data base of 17,000 names for the *Tideline* newsletter.

Nine people from the community serve on the San Francisco Bay Wildlife Society's Board of Directors. The Directors provide expertise and advise about Society operations and approve Society expenditures and fund raising efforts. Because of the rapid expansion of Wildlife Society endeavors, an Operations Committee was established to meet monthly for the purpose of conducting routine bookstore operations and other Society business. In January, The Society hired a part-time Program Administrator, Cecily Harris, to replace volunteer Jean Noll, who decided to "retire" from volunteering after many years managing inventory, ordering merchandise, tracking accounts, paying taxes and bills, handling mail orders, and generally managing the many daily business operations of the Society.

Thanks go to all these people who helped make 1994 another successful year for San Francisco Bay Wildlife Society and the Refuge.

San Francisco Bay Wildlife Society Gross Revenue





JOHN STEINER: Chief of Public Use



RICH HAIRE: Outdoor Recreation Planner



NANCY FRIES: Interpretive Specialist



AMY HUTZEL : Education Specialist



FRAN MC TAMANEY:
Environmental Education Coordinator

SANDY SPAKOFF:
Environmental Education Specialist
Environmental Education Center
Director





CECILY HARRIS: San Francisco Bay Wildlife Society
Program Administrator



"The Marsh Monster is Defeated" - A skit for volunteers.
(John, Rich, Sandy, Christine, Fran, Amy & Nancy)